

8 DIET FAILS TO AVOID | 10 BEST MOVES FOR THICK TRI'S

MUSCLE & PERFORMANCE

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**5 WAYS
TO RECOVER
LIKE A BOSS**

**+ 20-MINUTE
SUMMER-BODY
SHRED**

**BEST MOVE
FOR QUADS**

**FISH OIL FOR
FAT LOSS?**

STRENGTH IN MOTION

**» How to use loaded carries to carve
out a more athletic build**

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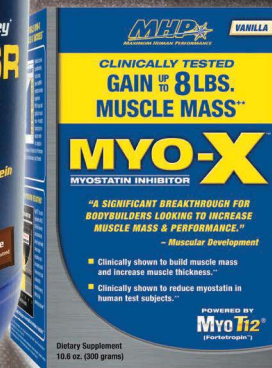
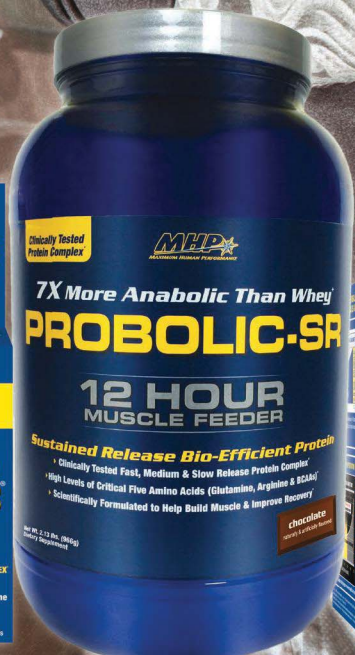
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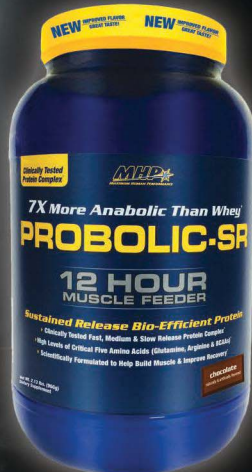


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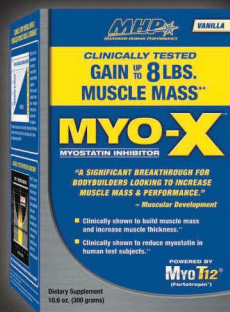


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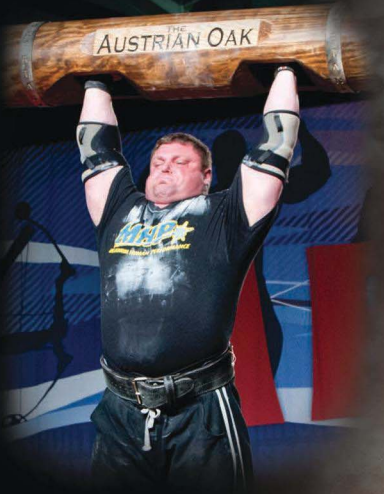


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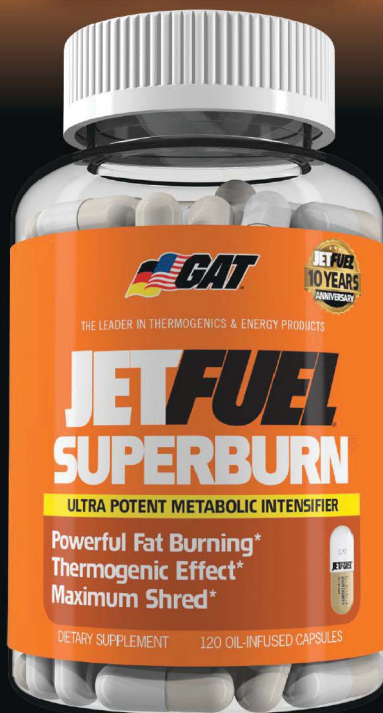
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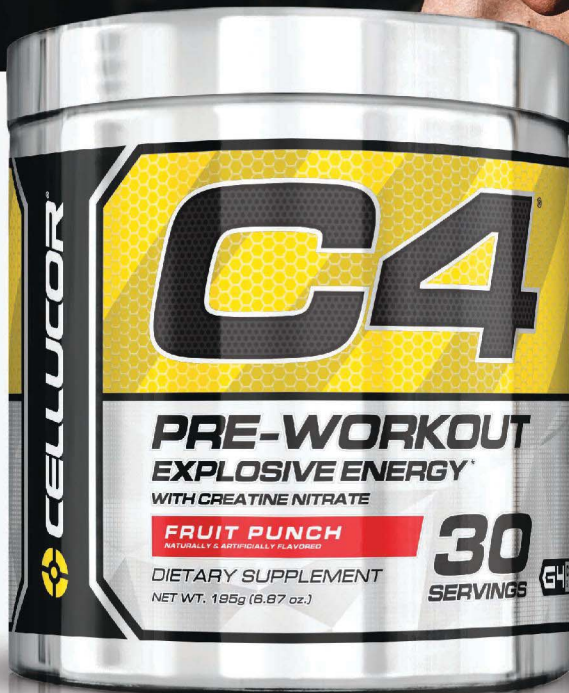
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“When done properly, loaded carries are a great movement for building strength and stamina in a hurry.”

— Mehmet Edip, Cover Model

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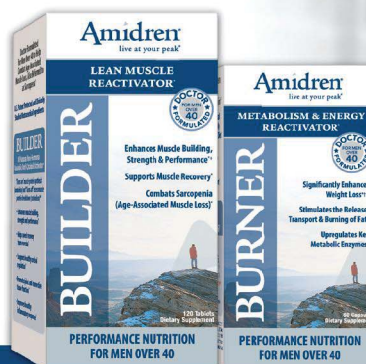
PERFORMANCE NUTRITION FOR MEN OVER 40!

FACT: As men age, they can lose 8% of muscle mass per decade. By the time you turn 60, you can lose 25% of your muscle mass.

AMIDREN BUILDER: Lean Muscle Reactivator – The reason men lose muscle mass as they age is attributed to a natural change known as sarcopenia (age-associated muscle loss). Your muscles now suffer from “anabolic resistance” and excess catabolism, and fail to respond to exercise and good nutrition like they used to. It's as if your muscles have gone dormant. AMIDREN BUILDER contains clinically researched ingredients to help reactivate your muscles to combat the effects of sarcopenia and restore the muscle building, strength and performance you had in your prime.

FACT: The loss of muscle mass and subsequent decrease in metabolism causes an increase in body fat in men over 40.

AMIDREN BURNER: Energy & Metabolism Reactivator – As men age, key metabolic functions and fat burning enzymes begin to decline. As a result, the release, transport and burning of fat for energy slows down, making it more and more difficult to lose weight. Medical researchers call this age-associated weight gain and it affects millions of men, beginning to develop as early as your mid-30s. AMIDREN BURNER uses an advanced release-transport-burn RTB Lipid Kinetics Technology and potent, clinically researched ingredients to help reactivate your metabolism so you can effectively lose body fat.



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» Glutamine is one of the most abundant amino acids found in skeletal muscle. It's naturally occurring in the human body, but it's also found in foods such as beef, beets, cabbage, chicken, eggs, milk products and spinach. Glutamine is what's called a *conditionally essential* amino acid, as the body's supply may not meet the demand under conditions of heavy metabolic stress like that experienced with intense weight training.

In the world of glutamine supplementation, there seem to be two camps: the naysayers and the supporters. Frankly, it's absurd that naysayers exist, what with all the science-backed reasons to use this amino acid to your advantage. Research published in the *International Journal of*

Sport Nutrition and Exercise Metabolism provides the latest case in point supporting glutamine as an ergogenic aid for those who weight train.

Using a double-blinded and placebo-controlled crossover design, researchers from Dalhousie University (Halifax, Nova Scotia, Canada) investigated the impact of L-glutamine supplementation on quadriceps strength recovery and soreness ratings following eccentric exercise. Male and female subjects took glutamine or a placebo once a day for three days and completed a bout of eccentric leg extensions at 125 percent of their predetermined max. The researchers reported that short-term glutamine supplementation increased leg strength

recovery by about 5 percent (measured as peak torque) in all participants both immediately and 72 hours after eccentric leg training. They also found that the relative increases in leg strength recovery were greatest in the men who took glutamine. For all subjects, glutamine supplementation resulted in a decrease in muscle soreness over the three days by up to 40 percent.

You hear that silence? The glutamine naysayers just got really quiet.

ACTION POINT: We recommend taking 5 to 10 grams of glutamine three to four times daily, with one dose taken 30 to 60 minutes before training and another dose within 30 to 60 minutes afterward.



TRAINING FUEL Be Bonk Proof

» Hitting the wall in a workout is no fun, but luckily science continues to uncover factors that can make the experience a little less devastating. One of those factors is glutathione, a powerful antioxidant and free radical scavenger that keeps oxidative stress in check even during hard training to delay fatigue and increase exercise volume. Recent research published in the *Journal of the International Society of Sports Nutrition* provides mechanistic and supporting evidence to help explain these fatigue-decreasing effects. In the study, researchers from Japan concluded that glutathione supplementation delays muscle fatigue by suppressing blood lactate levels as well as fatigue-related psychological factors in healthy men.

ACTION POINT:

There are a couple of ways you can boost your body's glutathione levels. The most reliable and affordable way to support endogenous glutathione production is to take 600 to 1,200 milligrams of N-acetyl cysteine 30 minutes before training or with a meal. Otherwise, as in the study, you can take 1 gram of reduced glutathione 30 minutes before training.

MAX STACK

Three Musketeers

» No two preworkout products are alike, but all the best ones have a few things in common: namely, a select group of ingredients that virtually everyone can agree are hugely effective at providing a short-term boost to your workout as well as long-lasting results in strength and size, among other physique and performance benefits. Here are three such superstars of the preworkout game:

CREATINE: Creatine is not only one of the most popular performance-enhancing supplements ever but it's also one of the most widely studied, with decades of research now confirming both its effectiveness and safety. Creatine is ideal preworkout, providing an immediate energy source for muscles that you'll clearly notice via more reps on actual weight-training sets. Long term, you'll notice significant gains in lean mass and strength. Two of the best forms are creatine monohydrate and creatine HCl. The two produce similar effects, with HCl's higher acidity making it slightly more potent.

BETA-ALANINE: Here's another preworkout juggernaut. Beta-alanine combines with another amino acid (histidine) to form the dipeptide carnosine in the body. This is key, as carnosine has been shown to boost size, strength, power, endurance and even fat burning. **When taken before training, beta-alanine produces an acute stimulant-like effect that can help your muscles contract stronger and longer.** You may feel a tingling sensation when taking beta-alanine, which is perfectly normal.

BETAIN: This supplement ingredient is relatively new to the game, but it has already made a huge splash. Recent research shows that betaine enhances size, strength and power. This is due in part to a resulting boost in protein synthesis, but research out of the University of Connecticut (Storrs) also found betaine to increase growth hormone levels and decrease the catabolic hormone cortisol.

Find these ingredients and others in: **PreCre by Muscle Elements.**

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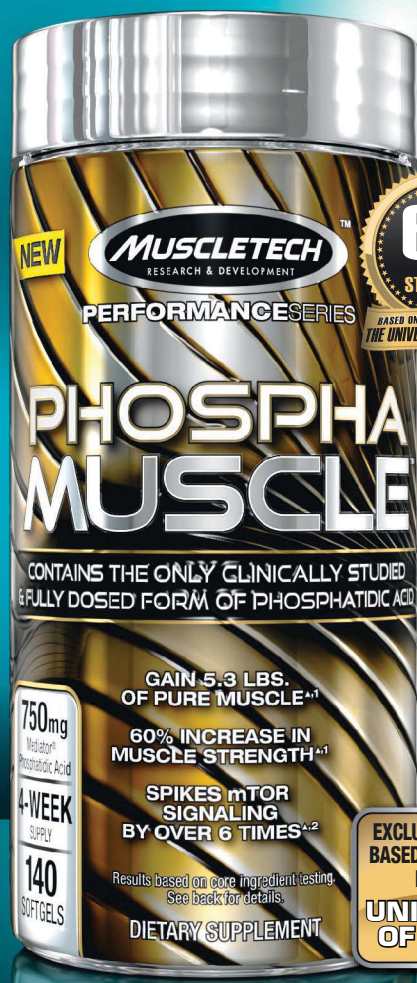
- Activates the primary musclebuilding response by over 6 times based on pre-clinical research
- Subjects training 3 times per week packed on 5.3 lbs. of lean muscle in 8 weeks – two times more than the placebo group
- Subjects amped up 1-rep max leg press strength by 60%
- Based on University of Tampa research published in *Nutrition & Metabolism*
- Certified for purity using Nuclear Magnetic Resonance Spectroscopy
- Formula tested for purity by a certified U.S. independent third-party lab

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The phosphatidic acid group gained 2x the muscle as the placebo group after 8 weeks.

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Uses only Patented, Clinically Studied Mediator® PA	✓	✗	✗



5.3 LBS. LEAN MUSCLE

In published research from The University of Tampa, subjects taking a 750mg clinical dose of phosphatidic acid built 5.3 lbs. of solid lean muscle in 8 weeks while training just 3 times per week – double that of the placebo group!

60% MORE STRENGTH

In the same gold-standard study, subjects increased their 1-rep max strength on the leg press by an incredible 60% in 8 weeks.

6X GREATER mTOR ACTIVATION

In a separate phase of the same study, pre-clinical in vitro research also showed that phosphatidic acid activated the mTOR enzyme – the primary regulator of muscle growth in the body – by over 6 times compared to baseline.



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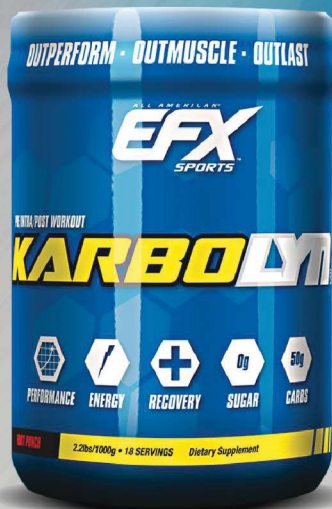
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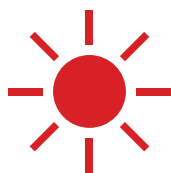
Terminal Fare

» Concerned that all those business trips you're forced to take are wrecking your diet? One way to minimize the damage is to be picky about where you switch planes. The Physicians Committee for Responsible Medicine recently published its 14th annual Airport Food Review, where it ranked the airports with the healthiest food options. Favorable marks were given to restaurants that provide at least one high-fiber, cholesterol-free item and offer fruits, vegetables, whole grains and/or legumes. At right is a list of the 10 healthiest airports, ranked in order with airport codes in parentheses. For full rankings and details, visit pcrm.org.



10 HEALTHIEST AIRPORTS

- 1 Baltimore/Washington (BWI)
- 2 Seattle-Tacoma (SEA)
- 3 Los Angeles (LAX)
- 4 Ronald Reagan Washington (DCA)
- 5 Newark Liberty (EWR)
- 6t LaGuardia (LGA)
- 6t Detroit Metropolitan Wayne County (DTW)
- 7 Denver (DEN)
- 8 San Francisco (SFO)
- 9 Washington Dulles (IAD)
- 10 Boston Logan (BOS)



VITAMIN SHOPPING

Micronutrient = Macro Importance

» Let's talk about all the reasons you should take vitamin D. Fundamentally, it's needed for calcium metabolism and calcium absorption in the body. It also regulates numerous genes and plays significant roles in regulating inflammation and immunity. In skeletal muscle, vitamin D is important for calcium regulation, protein synthesis and muscle growth, researchers say. And according to current studies, athletes are generally vitamin D-deficient, which may impair muscle function and performance.

Still not convinced you should take vitamin D? A recent study presented at Experimental Biology 2015 in Boston suggests that vitamin D status can predict one's testosterone level. A team of scientists from East Carolina University and Womack Army Medical Center (Fort Bragg, N.C.) provided evidence suggesting that **deficient blood vitamin D concentrations inhibit test production and could potentially limit human performance** in extremely fit high-performance army personnel. Okay, *now* you're convinced.

The best way to determine if you're vitamin D-deficient is to have your physician test your blood vitamin D levels. Alternatively, there are a number of "finger prick" tests available online. Research suggests that athletes should strive to achieve blood 25(OH) vitamin D test levels greater than 75 nmol/L.

If you're falling short on this critical micronutrient, you can get an abundance of vitamin D from sun exposure and top it off with dietary sources such as whole milk and salmon. As far as supplemental doses are concerned, evidence shows that 2,000 to 5,000 IU of vitamin D3 per day for eight weeks increases serum 25(OH) vitamin D to optimal levels.

9-13%

Lower mortality rate in individuals who engaged in regular "vigorous activity" (defined by such examples

as jogging, aerobics and competitive tennis) as compared to "moderate activity" (such as gentle swimming, social tennis, household cleaning), according to a James Cook University study of middle-aged Australians.





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The Flaw: Lowering the bar too far and rounding the lower back, a lumbar injury in the making.

The Fix: Don't concern yourself with reaching a certain point on your shins. Instead, lower the bar as far as you can while keeping your back flat, whether that ends up being mid-shin or just below the knees. Greater flexibility will come with practice.

The Flaw: Locking out the knees.

The Fix: Your legs should stay straight, but not completely extended. Keep a slight bend in the knees to take some tension off the lower back and better engage the hamstrings.

The Flaw: Lowering the bar too far out in front of the legs.

The Fix: Slide the bar straight down your legs so it practically brushes against you. To make this happen, initiate the movement by pushing your hips back as you lower the bar.

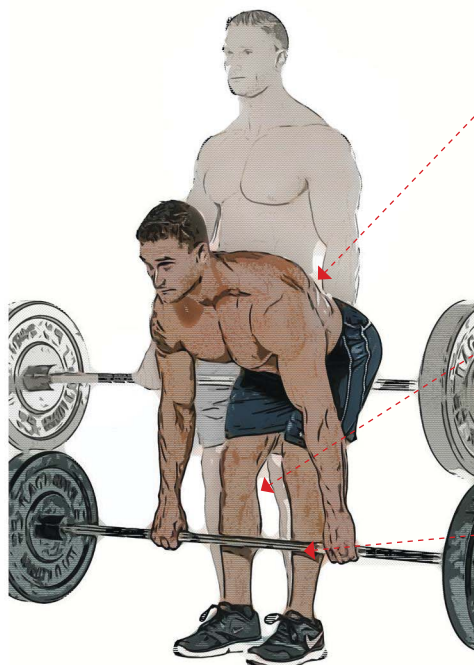


Illustration by Andrius Kravickas

TRAINING TIP BATTLE TESTED

» Those battle ropes your gym just added are great for HIIT cardio sessions, but they can also be used to target specific muscle groups. A study published online earlier this year by *The Journal of Strength and Conditioning Research* analyzed muscle activity via electromyographic signals of the two most common battle-roping variations: alternating waves (arms moving up and down opposite one another) and bilateral waves (both arms lifting and throwing down the ropes at the same time). While both variations involved the anterior (front) deltoids to a great degree, alternating waves targeted the external obliques significantly more while bilateral waves emphasized the lumbar erector spinae muscles. So if you're looking to work your entire core, incorporate both versions. But if you want to give your lower back a break, stick to alternating waves. ■



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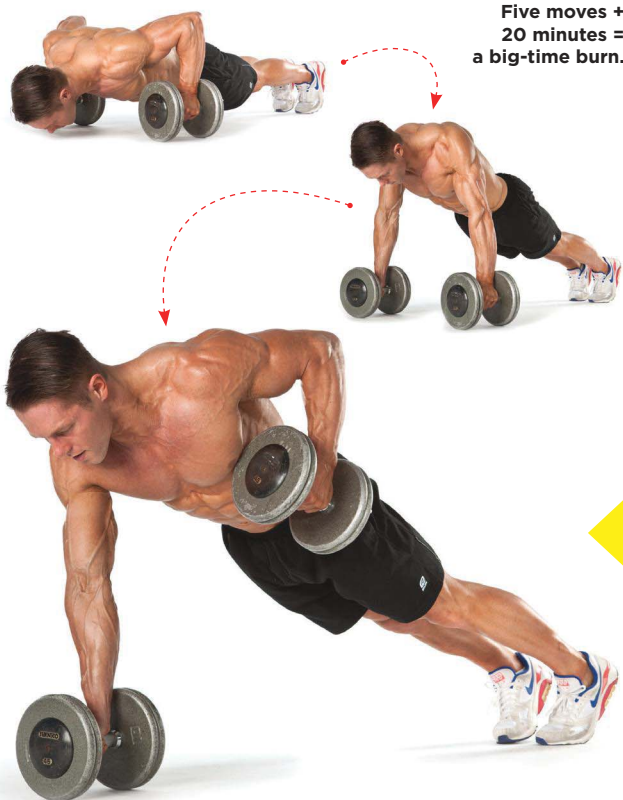
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[WORKOUT OF THE MONTH]



HIIT THE GYM

Got a little lazy this summer? No problem: You'll be right back on track toward your fitness goals with this killer conditioning workout.

BY MICHAEL BERG, NSCA-CPT

Here's hoping you've had your fill of beach parties, barbecues, bike rides, softball games and sunset walks these past few months. Because, well, summer's almost over. In just a few weeks, schools will be open and the pools will be closed. We can't blame you if you got a little sloppy and missed a couple — OK, more than a couple — of your regular workouts along the way. But now it's time to get serious again, and reintroduce your body to the type of challenging, high-impact training that netted you results in the past.

To help whip you back into prime condition, we turned to one of the best in the business: Brett Hoebel, a certified personal trainer based in Los Angeles, season 11 trainer on NBC's "The Biggest Loser" and creator of the new 20 Minute Body program. The workout he devised for *M&P*, which he named "The HIITman" because of its high-intensity interval training components, is made up of five killer exercises. Why five? "Because it doesn't need six," Hoebel says. "The intensity is already elevated, and it's intended to be done in 20 minutes or less."

Start with a five-minute warm-up, which could be a jog on a treadmill, jump rope or whatever mode of movement suits you best. From there, go right into the circuit of five exercises for three rounds total.

1. Dumbbell Thruster: Take a shoulder-width stance and hold two dumbbells at chest level with your palms facing each other. Leading with your hips and bending your knees, descend into a deep squat with your core tight and back flat. From there drive forcefully upward, extending your hips and knees to a standing position. At the top, take advantage of the momentum created by pressing the dumbbells overhead as you rotate your palms forward, all in one fluid motion. Lower the weights back to shoulder level and repeat.

2. Prisoner Alternating Jumping Lunge: Get in lunge position, one foot forward (knee bent) and the other leg extended behind you, toes on the floor. Put your hands behind your head with fingers laced. Drop your hips and bend your knees to descend into a lunge and forcefully jump back up, switching leg position in midair so your front leg moves behind you and vice versa. Repeat for 30 seconds.

3. Dumbbell Renegade Row: Place two dumbbells in a neutral position on the floor in front of you and get into a push-up start position, lower body balanced on your toes and each hand gripping a dumbbell. Do one push-up. From here, row one weight up to your flank and lower it to the floor; then the other. One push-up followed by a row with each arm equals one rep.

4. Lateral Shuffle Hop: Get into a standing ready position with your head up, knees soft and arms away from your sides, elbows bent and hands open and facing forward. Hop to one side, absorbing the impact with your hips and knees. Immediately and explosively hop laterally in the other direction. Continue back and forth for 30 seconds.

5. Superman: Lie facedown on the floor in a superman position: legs straight and together; arms extended straight overhead with your upper arms running alongside each ear. Simultaneously lift your legs and arms off the floor a few inches (or as high as you can) for a two-count, then lower and repeat for reps.

For more 20-minute workouts, check out Hoebel's new program, *20 Minute Body*, available at 20minutebody.com. ■

The HIITman Workout

Perform three rounds of the following circuit:

EXERCISE	TIME
Dumbbell Thruster	60 seconds
Prisoner Alternating Jumping Lunge	30 seconds
Dumbbell Renegade Row	60 seconds
Lateral Shuffle Hop	30 seconds
Superman	60 seconds

Note: Rest 30 seconds between each exercise. One round of the five moves should take about 6½ minutes, while three rounds can be completed in 20. Over time, you can increase the challenge by trying to complete more reps in each timed set (without compromising your form). For resistance, choose dumbbells you can lift 12 times where the last three reps are challenging.

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FRONT SQUATS

Shift your squatting focus forward with these programming and technique tips.

BY JOE WUEBBEN

Back squats get all the love and most of the publicity, but how's your front squat? Hopefully you don't respond to that question with, "Well, I don't front squat." *Wrong answer.* If squatting with a barbell on your back is important to you, putting that bar across the front of your shoulders and descending to thighs parallel or lower should be, too.

Why? Many reasons. First, from a physique standpoint, front squats emphasize the quads (as opposed to the glutes) more than back squats, making it a must-do move for anyone looking to bring up his or her quads. More important, the front squat is a highly functional exercise that enhances core stability while also improving your strength in major lifts such as deadlifts and squat-based Olympic moves.

"If I had to pick only one reason why the front squat is awesome, it's because of its direct translation to other core movements," says Josh Elmore, a CrossFit-certified strength coach and owner of Conjugate Consulting in Charlotte, N.C. (conjugateconsulting.com). "This

is due in part to the ankle, midline and shoulder mobility the lift requires. That positioning translates clearly across a wide range of other moves."

So the question now becomes: How do you make your front squat better? Elmore offers a few keen pointers:

Use the rack position: The first thing to address is how you hold the bar. In Elmore's opinion, a proper front squat does *not* entail crossing your forearms in front of you the way bodybuilders often do. He's strongly in favor of the "rack position," the same way you hold the bar at the end of a clean: bar resting on the front delts and supported lightly in the fingers, elbows held high so the upper arms are at least parallel to the floor. This might mean having to lighten the load a bit, but the benefits will be worth it.

"If your front squat is limited by your rack position, it's time to work on all the parts that are hindering you from getting into that position," says Elmore. "Don't be lazy and just cross your arms and load up the barbell; you're going to miss out on some of the translation

of the movement and ultimately cheat yourself out of more performance, mobility and movement efficiency."

Determine your frequency: Your best bet for balanced development is to do both back and front squats on a regular basis. Most people do the former more often than the latter, but Elmore suggests doing the opposite if your front squat is considerably weaker. He offers a simple formula for deciding the best ratio of front to back squat frequency: For every 10 percent lighter that your front squat one-rep max (1RM) is compared to your back squat 1RM, that's your ratio. For example, if your back squat 1RM is 315 pounds and your front squat max is 90 pounds less, that's roughly a 30 percent difference, so you'd want to do front squats at a 3:1 ratio to back squats. In other words, for every three workouts in which you do front squats, you'd do back squats once.

"I would personally have a four-week cycle in mind when programming for that ratio," says Elmore, meaning you'd do front squats three of those weeks and back squats in only one. "Then when you get to a 20 percent weight difference, close the gap to 2:1 and so on until you achieve a 1:1 ratio [10 percent weight difference or less]. Remember, this is just a programming approach to catch up the front squat to the back squat, that's it."

Bring up your weak areas: If your front squat is lagging, it's probably due to one or more deficiencies in strength, stability or mobility. "Where are you failing in your lifts?" asks Elmore. "And don't determine this on an attempt at 95 percent plus of your 1RM, determine it on where things fall apart on a heavy set of five reps. This will help identify what mobility and accessory movements you need to perform to help build your front squat."

"If you tend to lose lifts because you round your back due to a collapsing midline, focus on building your midline through accessory work: exercises such as banded good mornings with high reps, GHD sit-ups, weighted planks and hollow rocks," he suggests. "And if you have to rely on the elevated heel of a weightlifting shoe to complete lifts, then make sure you train ankle mobility on a regular basis." ■

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SQUEEZE PLAY

So what's the deal with compression garments?

BY LARA MCGLASHAN, CPT

Q I've been reading a lot about compression garments lately. What do they do and should I be wearing them when I work out?

A Compression garments have actually been used for years in the medical field for people with poor cir-

ulation and as an aid to recover from surgery. You may even remember an elderly relative wearing compression stockings to ease varicose vein pressure or to help boost circulation. That technology has since been adopted by the athletic community with many of the same principles in mind.

Compression athletic wear is skin-tight clothing that contains special, well-placed panels that aim to improve blood flow back to the heart, increasing overall circulation and re-oxygenation of the blood. "Increased circulation also aids the removal of byproducts

such as lactic acid that can lead to muscle soreness after training," says Dawn Ferreira, senior product specialist at Zamst precision engineered technologies (zamst.us). "Compression can also reduce muscle vibration that occurs during activity, thereby delaying the onset of fatigue."

There are two types of compression garments: Those with *graduated compression*, which are tighter in the extremities, are designed to help increase blood flow back to the core; and those with *compartmental compression* are tighter in particular areas, which vary depending on the sport you play. Both types help enhance proprioception by supporting posture and aiding in the movement of certain muscle groups, which can help delay fatigue and enhance performance, according to Ferreira.

The question, however, remains: Do these garments really work? A lot of people are dubious about the true value of the clothes, but there are just as many who are superfans. If you look at the research, upward of 30 or so studies support the garments' claims to fame, proving they help do such things as reduce blood lactate, improve vertical jump and accelerate recovery in all sorts of forums and trials.

However, a number of recent studies question the efficacy of compression garments as they're advertised. One published this year in the *International Journal of Sports Physiology and Performance* tested distance runners and monitored their gait, oxygen uptake and other variables as they ran on a treadmill without the garments. Then half of the participants put on calf compression sleeves and were retested. Results showed no significant differences between the efficiency of the runners when wearing the sleeves compared to running without them.

So do they work? Perhaps. But the good news is there's no harm in trying them out for yourself, and no studies to date have reported compression garments as having any negative effects. "A product must be a medical-grade compression to really provide a true benefit," advises Ferreira, so shop carefully. If you have the time and inclination to wriggle into the clothing, then go for it and form your own conclusions. ■

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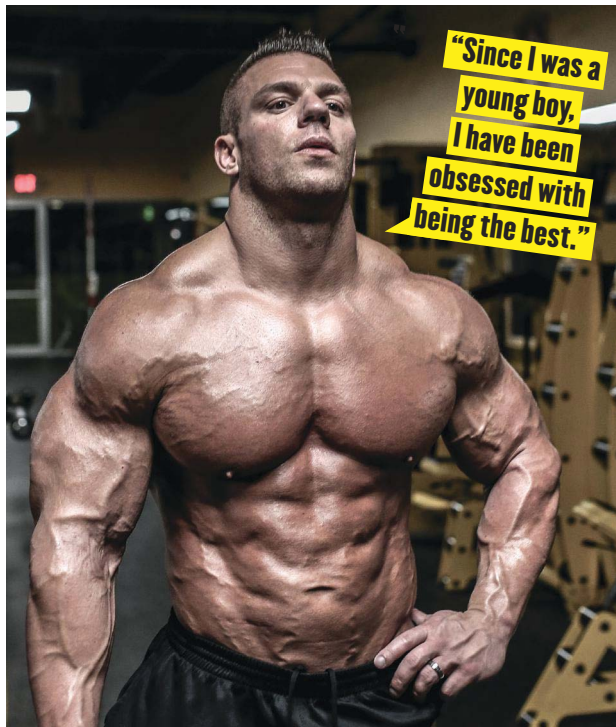
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PJ BRAUN

This hardcore athlete and nutrition company executive strives for “the best or nothing.”

BY JON FINKEL

UCLA’s iconic basketball coach John Wooden once said, “Failing to prepare is preparing to fail.” Or maybe Ben Franklin said it. Either way, someone very smart and known for success mouthed the words, and when taken to heart — as in the case of Prime Nutrition’s founder PJ Braun — they can help you achieve anything. In Braun’s case, he went from being a guy too small to play football to a bodybuilder to the CEO of his own nutrition company. How’d he do it? Preparation, of course.

At what age were you bitten by the iron bug?

I grew up playing Pop Warner football, and come time for high school I realized those guys were big! My mother was very apprehensive about me working out and getting hurt, but obviously now, 20-plus years later and interviewing for your magazine, she has gotten over it!

Who did you look up to when you started out in the weight room?

My parents were divorced and my biological father was a bodybuilder. He was not in my life, but I wanted him to be so badly that I tried to do everything I could to emulate him. Being as big or bigger than him was my ultimate goal. And of course, every one of us at one point or another wanted to be the next Arnold.

You’re a featured athlete for Prime Nutrition, as well as president of the company. Are there any traits from

bodybuilding that have carried over into the business world for you?

Absolutely! In bodybuilding and all my years of successfully coaching physique competitors, I earned a reputation for being meticulous with my preparation. That obsessive drive for perfection is applied to every aspect of the business, so although the success is amazing, I can’t say that I wasn’t prepared for this from the start. Victory favors the prepared.

Do you have a favorite product?

The easy answer is Max-HP, our preworkout [supplement] that I love and use before most of my training. But really, the product I am most proud of is our fruits-and-greens formula that provides a full day’s supply of fruits and veggies per scoop. The phytonutrient profile blows away any multi-vitamin on the market, it’s a great source of fiber, and we are the first company to make a product like this that actually tastes good.

What does your company’s motto of “The Best or Nothing” mean to you?

Since I was a young boy, I have been obsessed with being the best. It has caused me issues with obsessive-compulsive disorder and anxiety, but it has also brought me a great deal of success as a businessman. I couldn’t be the best football player and I couldn’t be the best bodybuilder, but I sure as hell can put out the best damn products, and I refuse to slack off or cut corners. With that attitude and a partner who views everything the same way I do, there’s no surprise our motto is “The best or nothing.” ■

BUILDING SHOULDER BRAUN

“I love training everything, but I’ve suffered numerous tears and brutal damage to my shoulders. Because of that I have developed a formula for success when working around pain and injury,” he says.

EXERCISE	SETS	REPS
One-Arm Cable Lateral Raise	3	20 (each side) ¹
Machine Lateral Raise	4	15-20 ²
Reverse Flye Machine	4	15-20
-superset with-		
Cable Upright Row with rope		
Bent-Over Lateral Raise	4	20
Dumbbell Lateral Raise	4	20
Seated Dumbbell Overhead Press	4	20,15,12,10 ³

1 No programmed rest; one arm rests as the other works.
2 Work to failure at the initial load, then reduce the weight by 20 to 30 percent. Repeat two to three times per set.
3 After reaching failure on the fourth set, immediately reduce the weight 20 to 30 percent and continue to failure.

PJ BRAUN

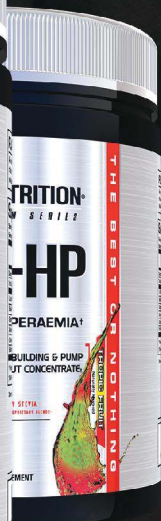
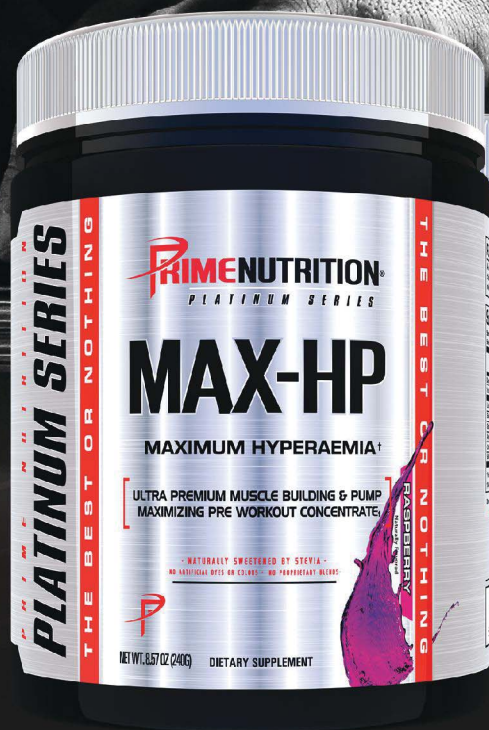
Birthdate: Feb. 6, 1981
Birthplace: Danbury, Conn.
Current Residence: Boca Raton, Fla.
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GET TO KNOW: INNER ARMOUR

Whether for casual consumers or NFL hopefuls, this Connecticut-based company strives to produce clean, results-driven supplements.

BY JILL SCHILDHOUSE

YEARS IN BUSINESS 10

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NFL TRAINING COMBINE Inner Armour works closely with the NFL training combine TEST Football Academy (testfootballacademy.com), a six-week transformation camp utilizing Inner Armour supplements to help NFL athletes achieve their goals in fitness and nutrition as they prepare for the draft. This partnership has led to many amazing transformations and draft picks over the last six years. Two of the greatest transformations were made by J.C. Copeland, who later signed with the Dallas Cowboys, and Mike Hunchak, who was drafted by the Oakland Raiders.

Inner Armour NFL combine test subjects have trimmed 40-yard dash times to 4.25 seconds, increased bench press rep totals (at 225 pounds) by 400 percent, increased lean body mass by as much as 15.8 pounds and decreased total fat mass by up to 26 percent.

"These athletes are submitted to constant monitoring of their nutritional intake, muscle development and overall performance," says John Morin, CEO of Inner Armour Nutrition, which has worked with more than 200 NFL draft athletes.

FORMULATION AND TESTING Inner Armour is committed to providing the most effective, cutting-edge, clinically tested and banned-substance-free sports nutrition products the world has to offer. Every Inner Armour product is designed specifically for the needs of amateur and pro athletes committed to superior results to enhance speed, increase strength, build muscle and ultimately drive power. Each is formulated by the Inner Armour team of leading industry professionals, scientists, product developers, trainers and registered dietitians to deliver the highest quality and meet the highest standards. ■

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A muscular man with a shaved head is shown from the waist up, shirtless, in a gym setting. He is lifting a yellow weight with his right arm, looking intently at the weight. The background is slightly blurred, showing gym equipment.

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BY MIKE CARLSON, NASM-CPT, CFL1 | PHOTOGRAPHY BY IAN SPANIER





Over the
last decade,

gym culture has been invaded by functional fitness: the idea that what you do inside the weight room should make you better at whatever you do outside the weight room. It seems the pendulum swung a bit too far, though, and soon we had people swinging battling ropes from atop a Bosu ball while standing on one leg. In reality, the exercises that most effectively cross over from the gym to the real world incorporate a simple movement pattern with an added stressor of weight or time ... something like a loaded carry.

There are many variations of a loaded carry, but they all share the same premise: moving a heavy weight over distance at speed. This brand of exercise is phenomenal at building work capacity (the amount of exercise volume you can tolerate and adapt to) and helps develop strong legs and hips, a rock-solid core, a bulletproof back and unbelievable grip strength. Best of all, the loaded carry is easy to learn.

"It's the most basic thing ever. You pick up something heavy and you walk with it," says Todd Bumgardner, MS, CSCS, a strength coach at Ranfone Training Systems (rtsct.com) in Hamden, Conn. "It's applicable to anyone across his whole life. It's a very useful thing to do."



FARMER'S WALK

Select a pair of heavy dumbbells and grasp one in each hand. (Try to use weights that are challenging to carry for the distance selected. The heavier the weight the better, but it will limit how far you can carry them with good form.) Stand up, center your weight, roll your shoulders back, activate your core muscles and begin walking. Make your core rigid enough that the weight does not cause you to veer off course. Taking small, rapid steps will afford you more control over the weight than using a longer stride.



locked & loaded

Strength athletes regularly use loaded carries in their training, but you probably won't find many pictures of Ronnie Coleman or Jay Cutler doing a farmer's walk; bodybuilders prefer exercises that have a range of motion they can manipulate for a desired effect. But just because loaded carries aren't too popular with the jacked-and-tan crowd doesn't mean they'll have zero impact on your physique. They can actually help transform you into a stronger, leaner and overall better-conditioned athlete.

Work capacity. The greatest contribution of heavy loaded carries is the increase in work capacity they engender. Proficiency with them will allow you to operate with a slightly higher heart rate and at a greater level of exertion. You'll be able to tolerate more volume, crank out a few more reps and recover more quickly between sets. Sure, loaded carries more efficiently target performance and function than aesthetics, but the ability to do more work in the gym means more calories utilized and more muscle fibers activated. That, friends, is the basis for burning fat and building muscle.

Hormonal response. Two of the hormones that athletes seek to maximize during training are testosterone and growth hormone. And guess what loaded carries do? A 2013 study published in *The Journal of Strength and Conditioning Research* found that carries and similar strongman-based activities elevated levels of salivary testosterone much the same way that traditional hypertrophy training does. Heavy carries — when done for 40 to 120 seconds — also place a heavy demand on an athlete's anaerobic lactic acid capacity, triggering a greater release of growth hormone. This means greater full-body growth and fat-burning potential, simply by carrying heavy stuff from point A to point B.



SUITCASE CARRY

A suitcase carry is identical to a farmer's walk except you hold the weight in just one hand. Stay as tall as possible with your chest up, squeezing your core and glutes as hard as you can to ensure the weight doesn't force you to deviate from your path. You can create some tension in your nonworking side by making a hard fist with your off hand and squeezing that lat to help brace your torso. Again, don't allow the weight to control your path. Give yourself a clear line to follow in the gym, like a line of mats. A more advanced progression is being able to zigzag as you walk: The directional changes require greater control than following a straight line and will further challenge your core. Perform an equal number of sets, distance and/or time on both sides.

UPLOAD YOUR TRAINING PROGRAM

Loaded carries are highly versatile, and can play a part in almost any portion of your workout. Here are three ways to implement them into your current routine.

Warm-Up (every workout) Use a loaded carry to wake up your central nervous system for the impending workout. Bumgardner likes the bottom-up kettlebell carry in this situation. Use distance as the metric of choice, performing three to four sets of 30 feet.

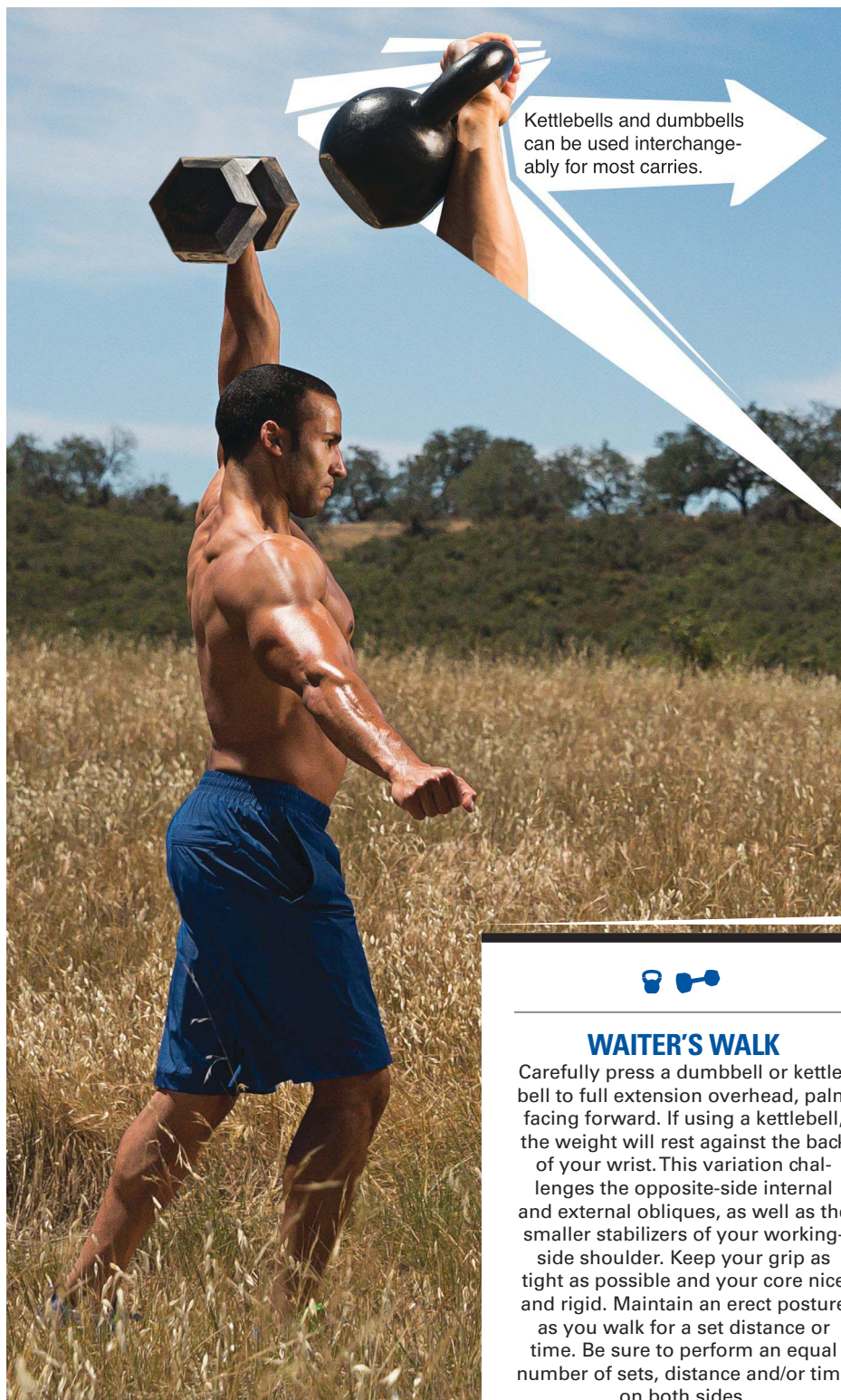
Conditioning (twice a week) For overall endurance and durability, perform a loaded carry for time rather than distance. (If you're squatting or deadlifting, perform this drill after the main strength portion of your workout.) Set a timer for six minutes and see how far you can go within that time. The goal is to progressively increase the amount of time you can keep the weight in your hands. If you fail early, put the weight down, shake out your hands and get back to it. If you can carry the weight for all six minutes, increase the load next time.

Finisher (twice a week, opposite days of conditioning) To increase work capacity or develop muscular endurance in a specific area, cap off your workout with a complex that involves a loaded carry. It can be as simple as a suitcase carry for distance followed by 20 kettlebell swings and 15 goblet squats. For improved shoulder strength and stability, Bumgardner often has his clients pair a 30-second bottom-up kettlebell walk with incline dumbbell presses.

Core strength. Not only are loaded carries a great overall exercise, but they're also deceptively taxing on your core. While most people overuse abdominal flexion movements such as crunches and hanging leg raises, exercises like the suitcase carry test anti-rotation and anti-lateral flexion qualities. The ability to brace the spine and maintain an erect torso under stress is a foundation of healthy movement; even such simple acts as carrying groceries or jogging demand this type of core rigidity.

Shoulder stability. Another surprising benefit of loaded carries is that they actively help chronic shoulder problems. Squeezing something tightly turns on the rotator cuff and acts like a prehab exercise for the shoulder. "You'll get a lot of rotator cuff and parascapular activation," says Bumgardner. "And having a really strong grip limits the amount of stress that transfers down your arm and into your shoulder." You'll also see gains in your forearms and traps, he adds. "The traps are more of a slow-twitch, dominant muscle, so if you're challenging them for time, you'll also see some hypertrophy there."

Admittedly, loaded carries won't put peaks on your biceps, but they'll do the next best thing: allow you to stay in the gym long enough, and with enough energy, to do the work that will build the kind of physique you want. "Even if your goal is to get bigger, loaded carries will add simple, consequence-free volume to your training," explains Bumgardner. "They can never be detrimental. If anything, they're always going to help."



WAITER'S WALK

Carefully press a dumbbell or kettlebell to full extension overhead, palm facing forward. If using a kettlebell, the weight will rest against the back of your wrist. This variation challenges the opposite-side internal and external obliques, as well as the smaller stabilizers of your working-side shoulder. Keep your grip as tight as possible and your core nice and rigid. Maintain an erect posture as you walk for a set distance or time. Be sure to perform an equal number of sets, distance and/or time on both sides.

BEGINNER TIP!

The limiting factor for almost all loaded carries is grip strength. If your grip is weak, stick to the farmer's walk and use as light a load as you need. As your hands get stronger, progress to the suitcase carry and then to the bottom-up kettlebell carry, which is the most demanding on your grip.



BOTTOM-UP KETTLEBELL CARRY

Grasp a kettlebell by the handle and curl it so it's upside down, hand close to your chin (or slightly in front of your chin for an extra challenge).

Bend your elbow roughly 90 degrees and keep it just slightly below the level of your shoulder, your knuckles pointed straight at the ceiling and your forearm aligned under the kettlebell. Do not allow the weight to pull your arm to one side or the other or to roll over toward your wrist. Focus on bracing your trunk and maintaining a tall posture. Be sure to perform an equal number of sets, distance and/or time on both sides.





YOKE CARRY

This is a classic competitive strongman event, with the load distributed across the shoulders like a traditional back squat. Instead of testing your grip or the stability of a single joint, it bypasses potential weak links and spreads the challenge over the entire body. There are several ways to perform this exercise.

If you have the budget and space, Rogue Fitness (roguefitness.com) makes a combination apparatus called the Y-1 that's perfect for garage lifters. It combines a yoke, squat stand and sled, all in one device. Bumgardner likes to use a safety squat bar, which encourages thoracic extension and good posture. Another option is to attach heavy kettlebells to the end of a barbell using thick exercise bands. Finally, a simple loaded barbell is the most accessible version of this move. You can place the bar across your traps or in a front rack position, with the latter likely requiring a lighter load.

After building some familiarity with the movement, work up to a weight that's close to twice your own body weight. Load the bar on the outside j-hooks of a squat rack, at the same height you use for squats. If you'll be carrying it across your back, consider using the pad or wrapping a towel around the bar. (Strongman yokes tend to be thicker than barbells.) Facing away from the rack, get under the bar, tighten your torso and glutes and stand up. Focus on a spot straight ahead and begin walking, keeping a rigid torso for the duration of the carry.



KEEP STRONG AND CARRY ON

Use these sample workouts to start getting more out of loaded carries, or mix and match exercises to create your own strength-and-conditioning carry session. Use the distances and times as starting guidelines and increase weight as you're able.

Warm-Up

ACTIVITY	SETS	DISTANCE
Bottom-Up Kettlebell Carry	3-4	30 feet
OR		
Farmer's Walk	4	50 feet

Conditioning

ACTIVITY	SETS	DISTANCE/TIME
Waiter's Walk	1	6 minutes
OR		
Farmer's Walk	1	150 yards
OR		
Yoke Carry	1	-- ¹

Finisher

ACTIVITY	SETS	DISTANCE/REPS
Suitcase Carry	3	60 feet
Kettlebell Swing	3	20
Goblet Squat	3	15

Perform these exercises as a circuit. Do not rest between exercises. Rest 60 to 90 seconds between circuits.

One-Arm Rack Walk	1	100 feet (each side)
Waiter's Walk	1	100 feet (each side)
Suitcase Carry	1	100 feet (each side)

For each exercise, complete the prescribed distance for one side, then switch immediately to the other. Do not rest between exercises.

¹Walk as far as you are able to within your available space and then back to the start. If using a barbell in a gym, space will be more of an issue, so repeat your walk in the available space as many times as possible in 6 minutes, pausing only to re-rack and reset the bar on your back. Be aware of those around you and use extra caution when turning.



ONE-ARM RACK WALK

Clean a kettlebell up into the rack position with your elbow tight to your body and wrist straight. In this position, the kettlebell should be touching your forearm and upper arm (outside of your biceps) and your thumb should come into contact with your collarbone.

This asymmetric load places a heavy burden on the opposite-side oblique muscles.

This move can also be performed with two kettlebells, which offers a more equitable distribution of the load, allowing you to walk with more total weight. ■

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TOP 10

TRICEPS EXERCISES



The (nearly) definitive ranking of the
BEST TRICEPS MOVES ever devised.

BY MICHAEL BERG, NSCA-CPT



Let's admit it: Some of our "Top 10" bodypart exercise rankings have been easier to compile than others. After all, it's not that controversial to tell you that the bench press is the premier chest exercise or the standing barbell curl is the best thing to come along for biceps since the open car window.

Triceps, however? That has proven more difficult. From the 10th pick to the first, debate echoed through the halls of *Muscle & Performance* (or at least electronically via a frenetic email exchange). Perhaps it's due to the rather complex nature of the triceps: It's made up of three heads — the lateral (outer), long (inner) and medial that splits those two down the center — that all share a common tendon at the elbow but attach individually around the shoulder area. While the lateral and medial heads attach to the humerus bone, the long head attaches to the scapula.

That structure means different exercises tend to target one head more than the others. For instance, overhead moves put the long head under stretch, and a stretched muscle will contract more forcefully. The lateral head comes into play when your arms are at your sides and your palms face down, while the medial head pops into gear when your arms are at your sides and you flip your palms up. Those factors make the task of sorting triceps exercises a tricky proposition, to say the least.

The result of our passionate bickering over what constitutes the best when it comes to triceps development follows. It's a mix of cables, machines, free weights and two revered bodyweight exercises, including a far-from-unanimous choice for the top spot. But quibbles over ranking aside, we can guarantee one thing: Every single move on this list can help you build bigger, stronger and more prominent tri's.

10

REVERSE-GRIP CABLE PRESSDOWN

► As noted in our introduction, a reverse grip where the palms face upward activates the medial head of the tri's. Thus, no triceps workout is truly complete without an underhand exercise. To that end, the reverse pressdown is a standout, providing continuous resistance throughout the range of motion thanks to the cable.

MAIN AREA TARGETED Medial head

STRENGTHS It's not the most impressive movement you'll ever do where weight load is concerned, but form is paramount since you're targeting the smallest of the three triceps heads. Go too heavy and you'll rely on momentum and an assist from the lateral and long heads, among other muscle groups. You won't hear us say this often, but for a direct hit on the medial head, a machine beats any free-weight alternative hands down (pun intended). The cable pressdown is much preferred to the dicey nature of going underhand on barbell and dumbbell exercises, which tend to put the wrist under strain in awkward positions.

HOW-TO Stand in front of a high-pulley cable and grasp a straight-bar attachment with a palms-up (supinated) grip. With your knees soft, lean forward slightly at the hips and keep your elbows close to your sides, bringing your upper arms parallel to the floor. From here, forcefully extend your elbows to push the bar toward your upper thighs at the very bottom of the range of motion. Squeeze and hold for a one-count before returning to the point where your arms are parallel to the floor.



Photo by Robert Reiff

9 MACHINE TRICEPS EXTENSION

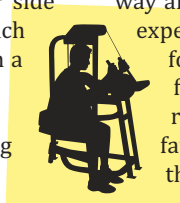
The typical machine triceps extension comes in a few different flavors, including an upper-arm pad that's horizontal and another that's angled similar to a preacher bench. All come from the same general playbook, however, pitting your triceps against a pin-selector weight stack, with a few advantages of mechanical design on your side that may help you handle a touch more weight than you could on a free-weight alternative.

MAIN AREAS TARGETED Long and lateral heads

STRENGTHS As with all machines, the biggest strength is also viewed by some as a weakness, in that it locks you into a particular range of motion and creates a safer environment for the lift. If the arc of the particular machine feels natural and comfortable to you, great, but if not, the exercise could do more harm than good. That said, a machine-based movement is ideal for beginners just learning their way around the gym, as well as more experienced types who are looking for a change of pace or a solid finisher with which they can rep away without worrying that fatigue will overly compromise their form.

HOW-TO Adjust the seat so your upper arms rest flush on the pad (whether angled or flat). Grasp the handles — you can often experiment with various grips, including hammer style — and push them forward slightly to separate the stack. Contract your tri's to achieve full elbow extension, holding the endpoint for a one-count before returning to the start. Don't let the weight stack touch down between reps.

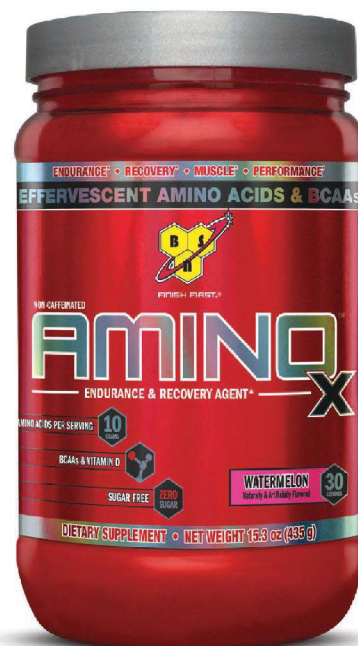
Don't be afraid to go heavy here. One of the greatest advantages of machine work is that you can use more weight without the use of a spotter. With some machines, you can also train one side at a time, spotting yourself with your nonworking hand.





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8

OVERHEAD CABLE TRICEPS EXTENSION

Variations of cable-based pressdowns appear three times on this list, and for good reason. The cable apparatus offers versatility, a range of grips thanks to the various attachments and the aforementioned continuous tension, keeping pressure on the working muscle throughout every rep without the tension changes inherent in free weights. (Free weights have to contend with gravity and the various angles of pull that occur in each stage of a rep.) Such is the case with overhead extensions, which are often done with a rope but can also be performed with a straight bar, cambered bar or one arm at a time via a D-handle.

MAIN AREA TARGETED

Long head

STRENGTHS

Putting the triceps under stretch, as we've explained, puts your long head in prime, pre-stretched position. Add to that the cable's continuous tension and you have a viable alternative to another popular free-weight counterpart coming later in this list, giving you the ability to switch things up every now and again.

HOW-TO

Attach a rope to a high-pulley cable and, facing away from the stack, grasp each end with a neutral, shoulder-width grip with your hands near your ears. Take a step out with one foot and lean forward 30 to 45 degrees at the hips, keeping your core tight, chin up, back planed and upper arms nearly parallel to the floor. Moving only your forearms, extend your elbows out in front of you until your arms are parallel to the floor; stop and squeeze, then return to the start. Don't let the weight stack touch down between reps.

For an even greater stretch, set the pulley to the lowest setting. This pulls your elbows back into line with your body and creates a more vertical path of resistance.



{Dumbbell Kickback}

▲ Cue Kanye West, because the kickback doesn't take this award without an obligatory outburst of disapproval. In a sea of faulty form — squirming bench presses, half-finished squats, hip-helped barbell curls — it might just stand out as the world's most poorly performed exercise. People don't hold their upper arm in the right position and tend to bring the weight too far forward, generating extra momentum as they extend their arm. So it was only after some disagreement among the *M&P* editors that the dumbbell kickback made this list. Bottom line? *If done correctly*, kickbacks can be one heck of an effective movement.

MAIN AREAS TARGETED Lateral (outer) and long heads

STRENGTHS

An independent study commissioned by the American Council on Exercise in 2011 tabbed the kickback as one of three standout triceps exercises (along with dips and diamond

push-ups), registering among the highest levels of muscle activation among eight movements tested by University of Wisconsin-La Crosse researchers. Indeed, the kickback elicits a powerful contraction at the apex of each rep, pitting the triceps directly against the pull of resistance.

HOW-TO

Grasp a dumbbell in your right hand and position yourself alongside a flat bench with your left hand and left knee on the bench and your right foot on the floor. Your torso should be nearly parallel to the floor. Raise your upper arm so it's alongside your torso and keep your elbow locked there. From here, extend your forearm straight back to full elbow extension, holding that peak contraction for a beat before lowering slowly to the start. Don't let the dumbbell track past the point where your forearm is directly perpendicular to the floor; and don't allow your elbow to drop or rise at any point during a rep.

6 Triceps Pressdown

This top-10 rundown has been admittedly heavy on machine-based exercises, and that's by design. It's because we can get behind the many benefits of machines we've touched on to this point, but we know they also have their limitations, thus shifting them to the lower half of the list. This movement, for one, is a go-to for nearly everyone interested in stronger, larger triceps, and while it isn't perfect because it's relatively easy to cheat by leaning into the rep, it does an outstanding job of engaging the

triceps. Watch the mirror as you move into a fully flexed position and you'll see exactly what we mean.

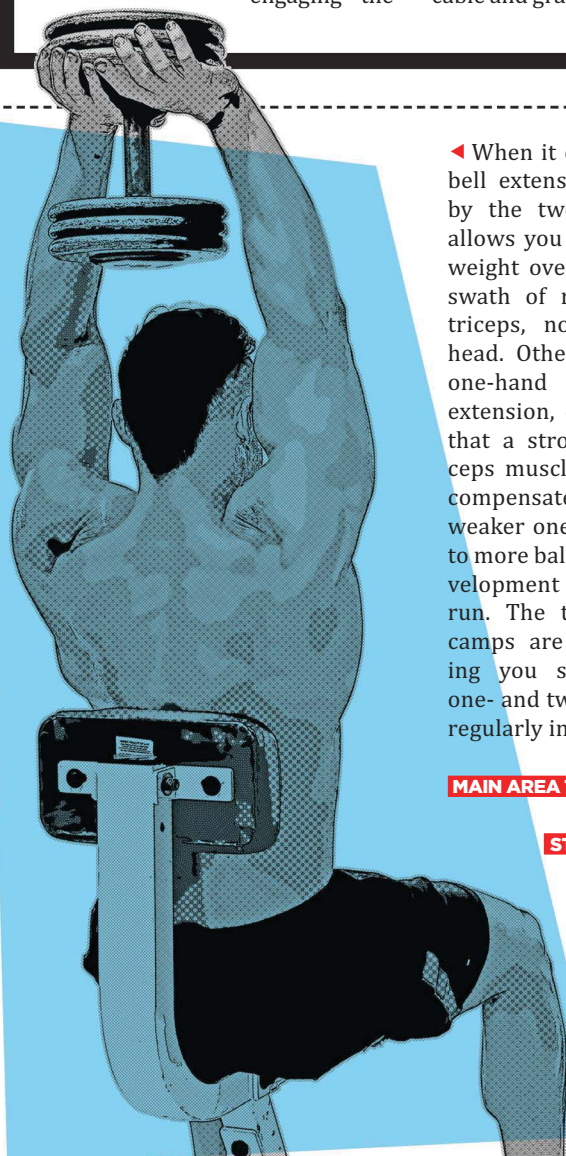
MAIN AREA TARGETED Lateral head

STRENGTHS In addition to all the cable benefits mentioned earlier, the pressdown has one more advantage of note: It's such a simple setup. That means you can easily pair it with other exercises in a circuit, and do drop sets with ease with the slip of a pin.

HOW-TO Stand in front of a high-pulley cable and grasp the straight-bar attach-

ment with a palms-down grip. With your knees soft, lean forward slightly at the hips and keep your elbows close to your sides as you bring your forearms parallel to the floor. Flex your tri's to press the bar toward your thighs until your elbows are fully extended. Hold the peak contraction for a beat before returning to the start, being careful not to allow the weight stack to touch down between reps.

You can also use a variety of grips and attachments for comfort or to slightly alter the muscular emphasis. A V-bar, for example, will provide some relief to those with wrist pain and a rope attachment will elicit a slightly longer range of motion.



◀ When it comes to overhead dumbbell extensions, some people swear by the two-handed version, which allows you to drive some impressive weight overhead and engage a wide swath of muscle fibers in the triceps, notably the long head. Others prefer the one-hand overhead extension, explaining that a stronger triceps muscle cannot compensate for a weaker one, leading to more balanced development in the long run. The truth? Both camps are right, meaning you should use both one- and two-arm variations fairly regularly in your routine.

MAIN AREA TARGETED Long head

STRENGTHS In the overhead dumbbell extension you rep directly against the pull of gravity; there are no angles or pulley systems, just a pure up-and-down action. The exercise also accentuates the stretch on the

muscle via the overhead position of your elbow as you lower the dumbbell behind your head (the eccentric phase of the motion), which leads to a stronger contraction in the lifting (concentric) phase thanks to a phenomenon known as the stretch-shortening cycle.

Overhead Dumbbell Triceps Extension 5

HOW-TO Sit upright on a low-back bench, feet flat on the floor. Grasp the inner plate of a dumbbell as you hold it overhead at full arm extension, wrapping your thumbs around the handle for safety. With your back and core solid, bend only at your elbows to lower the weight behind your head until your arms form 90-degree angles. Hold that stretch for a brief count, then press the weight back up to full extension. Keep your elbows tucked in close to your ears throughout the movement.

Do use the single-arm version to your advantage. Research shows that muscles produce up to 20 percent more force when worked unilaterally.

4 LYING TRICEPS EXTENSION

It's otherwise known as a french press, but don't let that fool you; this exercise is always ready for battle. It's a heavy-duty, mettle-testing move that can serve as an anchor leading off any triceps workout. It can be performed with a barbell, an EZ-bar or dumbbells, each of which changes the muscle fiber recruitment patterns in the triceps ever so slightly, although all maintain focus on the lateral head with secondary emphasis on the long head.

MAIN AREA TARGETED Lateral head

STRENGTHS This exercise is a unique blend of brute force and refined movement. In other words, while you can handle a good deal of weight once you learn proper form, it also provides for a long, arcing range of motion that requires strict concentration.

HOW-TO Lie faceup on a flat bench with your feet flat on the floor. Have a partner hand you a straight or EZ-bar and grasp it with an overhand grip. With your arms extended, hold the bar above you at a 45-degree angle back toward your spotter. (This puts more constant tension on the triceps in the elbows-straight position versus

holding the bar directly perpendicular to the floor.) Engage your triceps as you slowly lower the bar toward your forehead. When your elbows reach a 90-degree angle, pause for a moment, then forcefully extend back to the start position. Keep your elbows turned in toward your midline throughout; don't let them stray outward.

The skullcrusher is a closely related movement where you keep your upper arms perpendicular to the floor, increasing the contribution from the medial and lateral heads and allowing you to handle slightly more weight.

3 WEIGHTED TRICEPS DIP

The parallel-bar dip is an amazing exercise that will provide plenty of muscle stimulation for beginners and a fair number of intermediate lifters. Advanced lifters, however, run smack into perhaps its only discernible flaw: Your ultimate resistance level is limited by your bodyweight. Enter weighted dips, where you either strap additional plates to yourself via a specialized belt-and-chain apparatus or wear a weighted vest to kick the intensity up a notch or two. (If you don't have parallel bars, you can also try bench dips by placing your hands along one edge and lowering your rear end toward the floor; if you put your feet up on a bench set parallel to the first, you can also have a partner place a weight on your lap for added resistance.)

MAIN AREAS TARGETED Lateral and long heads

STRENGTHS Like its cousins the push-up and pull-up, the dip is a pure, basic motion that engages multiple muscle groups synergistically; in this case the chest and shoulders tend to participate, which you can dial back by making sure your body is as upright as possible. And once you're trained to the point you can handle your own bodyweight with relative ease, you can employ additional plates to pyramid up (or down) from set to set, giving you more variables to manipulate.

HOW-TO Grasp the dip bars with your arms extended. Keeping your upper body as upright as possible and your arms in tight, bend your elbows to lower your body toward the floor. When you "bottom out" — you can't bend your arms any farther — press your hands into the bars and flex your triceps to extend your arms and return to the starting position.

2 CLOSE-GRIP PUSH-UP

In the initial iteration of this list, the close-grip (or diamond grip, specifically) push-up was slotted fifth. But science can't be denied and the data proved persuasive. For one thing, the 2011 American Council on Exercise-sponsored study cited earlier declared the diamond-grip push-up as the best traditional exercise for overall stimulation of the triceps muscles, with serious activation in the lateral, long and medial heads, beating out dips, kickbacks and pressdowns, among others.

MAIN AREAS TARGETED Lateral, long and medial heads

STRENGTHS The ultimate do-anywhere exercise, push-ups are as pure a test of strength and stamina as you'll find in the exercise lexicon. It not only engages the triceps — the closer grip calls more on the tri's while a wider grip requires more of the pecs — but also indirectly works the core, since you need to hold the plank position throughout. Back to that ACE study, it's notable that the diamond push-up was 13 percent more effective than kickbacks and dips at targeting the lateral and long heads of the tri's, at least in terms of EMG measurement. That's not a definitive argument-ender, as we explain next, but it's convincing enough to make push-ups a mainstay in your triceps workouts.

HOW-TO Assume the top position of a push-up, placing your hands beneath your chest and forming a diamond on the floor with your thumbs and index fingers. Your elbows should be extended, body straight from head to heels, just your toes and hands in contact with the floor. From here, bend your elbows to lower your body toward the floor, as low as you can get, before reversing back to the start.

To increase intensity, wear a weighted vest. You can also do three to five sets of three to five plyometric close-grip push-ups right after warming up to trick your central nervous system into recruiting more muscle fibers on your normal sets that follow.



Photo by Robert Reiff

Close-Grip Bench Press

So, about that 2011 ACE study we just mentioned: It ranks the close-grip bench dead last among the eight tested

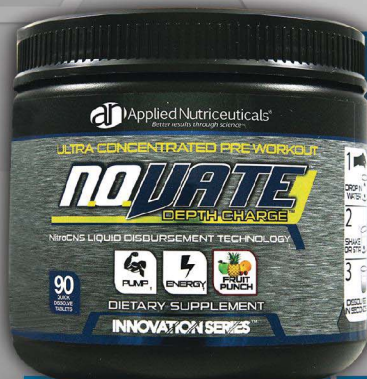
movements as far as triceps activation goes. So how can we possibly bestow our No. 1 ranking on it? Well, from the bodybuilding perspective, strength matters. That is, a stronger muscle is usually a larger one. Growth processes are engaged when you push a muscle group beyond its current capabilities, causing a cascade of reactions so the body is better prepared for that challenge next time around. And when it comes to building pure strength, no triceps-specific exercise can match the advantages of the close-grip bench.

MAIN AREAS TARGETED Lateral, long and medial heads

STRENGTHS Like the dip, the close-grip bench is a multijoint move that calls on the chest, shoulders and triceps to complete a rep. While other exercises are much more efficient at isolating the tri's, the synergistic action of a bench press means you can move more weight. More weight equals more intensity equals more strength equals — you guessed it — more mass in the long run.

HOW-TO Lie faceup on a flat bench with your feet flat on the floor. Grasp the barbell with a narrow, inside-shoulder-width overhand grip. Un-rack the bar and hold it above your chest with your elbows extended. To begin, lower the weight under control to your lower chest, keeping your elbows close to your body throughout the descent. At the bottom, lightly touch the bar to your lower pecs — no bouncing — then extend your elbows powerfully to drive the weight back to the starting position.

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NOW TRI THIS

This general muscle-building triceps workout, which could be done once or twice per week and paired with chest, shoulders or biceps, is crafted from a selection of our top 10 exercises.

EXERCISE	SETS	REPS
Triceps Pressdown (warm-up)	2-3	12-15
Close-Grip Bench Press	4	12,10,8,6
EZ-Bar Lying Triceps Extension	4	12,10,8,6
Two-Arm Overhead Dumbbell Triceps Extension	3	12,10,8
One-Arm Reverse-Grip Cable Pressdown	3	12,12,12
Close-Grip Push-Up	3	To failure ■

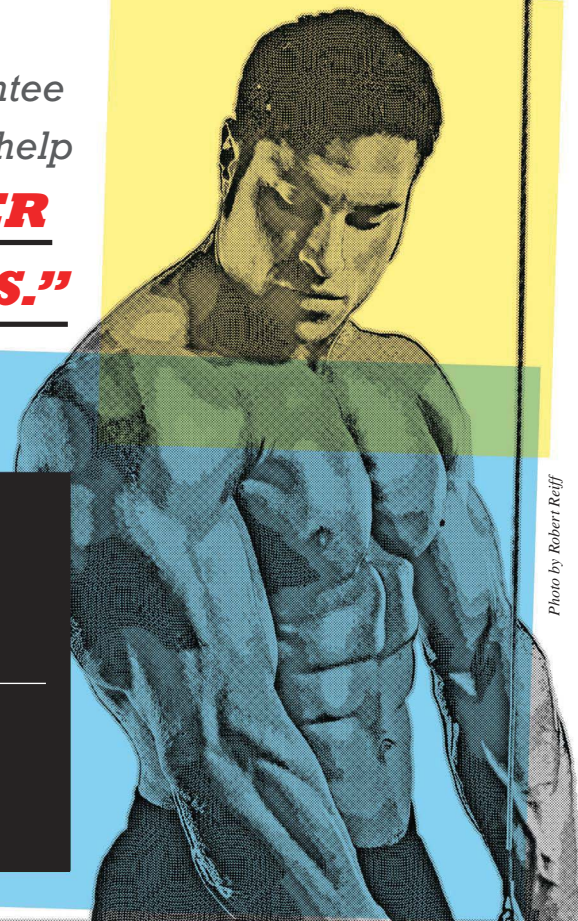
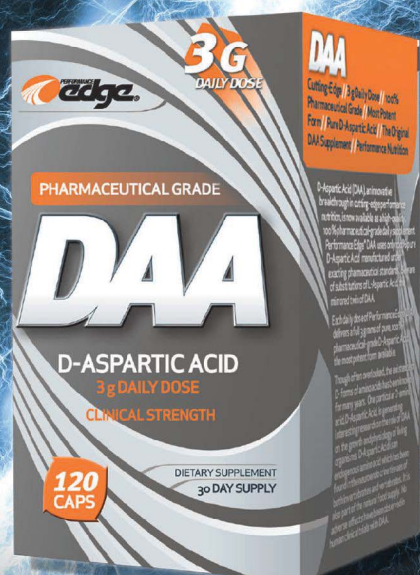


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A man in a blue suit is seen from behind, holding a large pizza high above his head with both arms. The pizza is a pepperoni pizza. A piece of torn, yellowed paper is stuck to the pizza, with the words "DIETARY BLOOPER REEL" written on it in a bold, black, hand-drawn font. The background is a plain, light gray surface.

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be weighing
you down and
sabotaging
your physique.**

BY MATTHEW KADEY, MS, RD

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authors surmise that this type of light may stimulate brain regions that regulate appetite.

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Want to stay slim? Save the hashtagging for later.

You're a creature of habit

> You may think serving up the same old boring chicken breast for dinner every night is a healthy idea, but in truth it might be one reason you're a few cans short of that six-pack you want. A 2015 study published in *The Journal of Nutrition* found that people who consume a wider variety of nutrient-dense foods tend to have slimmer waistlines than those who eat a monotonous diet. One explanation could be that the more healthy foods you take in, the greater range of fat-burning nutrients you're exposed to.

🔥 **Fight Back:** To add diversity to your diet and trim fat in the process, try to intro-

duce one or two unfamiliar healthy foods to your grocery cart each week. This could be anything from Artichoke (hello, fat-burning omega fats!) to baby kale to kefir.

You're obsessed with protein

> We would never question the importance of protein for building glance-worthy muscles, but it's entirely possible to get too much of a good thing. The harsh reality is that your body can put to good use only so much protein in one sitting. If you're adding multiple scoops of protein powder to your postworkout shakes and grilling up Flintstones-sized steaks on the regular, you run the risk of those excess protein calories pad-

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ding your fat stores, not your muscles.

🔥 **Fight Back:** When it comes to protein, more is not always better. For a more optimal muscle-building formula, consider spreading your protein intake throughout the day instead of loading up at certain times. You want to aim for roughly 30 to 40 grams of protein during meals and 10 to 20 grams at snack time.

You reach for the can opener too often

➤ Canned items such as fish and beans can be a healthy addition to your diet, but research shows they have a dark side when you're fighting the battle of the bulge. A recent investigation published in the *International Journal of Obesity* discovered that people with the highest levels of bisphenol A (BPA) in their urine were more likely to be fat than fit. BPA is a sketchy chemical found in the protective lining of many canned foods and some plastic containers that may mess with your metabolism. It has also been linked to heart disease and infertility.

🔥 **Fight Back:** Freshen up your diet. A study by the National Resources Defense Council found that people who ate only fresh food — abstaining from anything packed in cans or microwaved in plastic — for just three days experienced a more than 60

percent drop in urinary BPA levels. Not ready to give up your protein-rich canned tuna? Switch to brands such as Wild Planet or Eden Organic that use cans not lined with this health pariah.

You eat too many "health" foods

➤ Not all items in the health-food section of your grocer are nutritional saints. Many packaged so-called "health foods" can be sneaky sources of undesirables such as sweeteners and cheap fats that could help pack on the pounds if you let your guard down. Which is exactly what many people do. Take, for example, a Cornell University study that found we often view snack foods such as chips and cookies that are labeled "organic" as being healthier — that is, lower in calories and fat — than their counterparts without the organic designation, a state of mind that could lead to overeating. Further, "gluten-free" may also mean nutrient-free, with many products being as high in sugar, fat or total calories as many of their so-called less-healthy counterparts.

🔥 **Fight Back:** Look past the marketing hype and base your purchases on what the fine print tells you, namely the Nutrition Facts panel and ingredient list. A study published in *The Journal of Consumer Affairs* found that thorough label reading is clutch when you're trying to shed fat.

To avoid a metabolic meltdown, look for BPA-free cans and containers.



"KICKING OFF A MEAL WITH A LOW-CAL NOSH THAT PROVIDES FIBER, LIKE A SALAD, CAN HELP FILL YOU UP SO YOU'RE LESS LIKELY TO REACH FOR ANOTHER SERVING."

You jump right into your meals

➤ While it's always a good idea to push away the bread basket at a restaurant, shunning appetizers could be one reason you stuff yourself silly at mealtime. Results of a Pennsylvania State University study found that when subjects ate an apple 15 minutes before a meal, they slashed their overall calorie intake in the test meal by 15 percent compared to when no fruit was consumed. Kicking off a meal with a low-cal nosh that provides fiber can help fill you up so you're less likely to reach for another serving.

🔥 **Fight Back:** If you have trouble saying no to seconds, try eating a reduced-calorie appetizer such as a broth-based veggie soup, salad or piece of fruit before digging into your entrée. As a bonus, you'll increase your intake of essential nutrients.

You've ditched dairy for faux milks

➤ It may sound counterintuitive, but lower-calorie non-dairy milks such as almond and soy could be hindering your fat-loss pursuits. A watershed study published in the journal *Nature* discovered that emulsifiers such as carrageenan, polyglycerols and gums added to several packaged foods like shelf-stable no-moo milks and ice cream can disrupt the composition of bacteria in your gut and contribute to inflammation and weight gain. Emulsifiers are now ubiquitous, routinely being added to foods to extend their shelf life, improve texture and keep ingredients from separating.

🔥 **Fight Back:** Taking in a modest amount of emulsifiers probably won't contribute to Buddha-belly, but if your diet is plush in packaged

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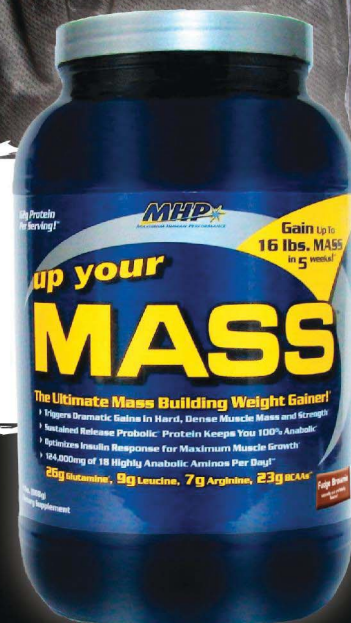
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foods you may want to start scanning the ingredient list and opting for items made without them like *ye olde milk* more often. Cooking from scratch (*homemade almond milk, anyone?*) is also a surefire way to sidestep emulsifiers.

You reward fat-burning efforts

> It's all too easy to justify eating a double-chocolate muffin or second energy bar because you just burned off some serious fat calories on the treadmill. But beware of pigging out after a workout. In a recent study published in the journal *Appetite*, people who performed a 20-minute workout labeled "fat burning" ate about 35 percent more calories afterward than they actually burned off during the activity. When exercise is deemed



"BEWARE OF PIGGING OUT AFTER A WORKOUT. IN A RECENT STUDY PUBLISHED IN THE JOURNAL APPETITE, PEOPLE WHO PERFORMED A 20-MINUTE WORKOUT LABELED 'FAT BURNING' ATE ABOUT 35 PERCENT MORE CALORIES AFTERWARD THAN THEY ACTUALLY BURNED OFF DURING THE ACTIVITY."

to be "fat burning," it can make people think their metabolism is revved and that's a license to reward oneself. On the flip side, no excess calorie intake was observed in those who performed a workout labeled "endurance exercise."

Fight Back: It's a good idea to be realistic about your calorie burn at the gym so you don't undo any benefits by gorging postworkout. Or ditch the monotonous fat-burning sessions and kick things up a notch with interval training, which torches

tons of calories and increases metabolism. Scientists in Australia found that volunteers experienced less hunger and desire for fatty foods after interval training than moderate exercise, adding to the fat-blasting powers of this training method. ■

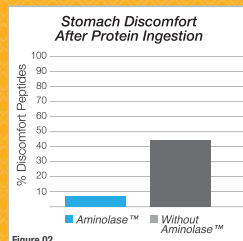
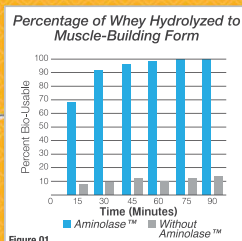
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ALREADY CHAMPIONED FOR ITS HEALTH BENEFITS, FISH OIL SOLIDIFIES ITS REP AS A POWERFUL LEAN-MUSCLE SUPPLEMENT.

BY DWAYNE JACKSON, PHD

Illustration by Paul Duarte

If you had to put your supplement budget into a pie chart, a large wedge would likely be devoted to protein, with a smattering of smaller slices dedicated to pre-workouts and a few ancillary supps. But if you want a do-it-all supplement with a proven pedigree and a growing body of favorable research, then it's time to give fish oil a bigger piece of the pie.

Over the last several years, the research findings supporting the health benefits of fish oil have been astounding. What you may already know: The omega-3 fatty acids found in cold-water fish can reduce inflammation, boost cardiovascular health, increase

the efficiency of the heart during exercise and maintain healthy blood lipid profiles. What you may not know: Fish oil has also been shown to increase fat metabolism and lean mass gain. Better overall health and vitality *and* bigger, leaner muscles? We know it smells — *wait for it* — fishy, but fish oil really *is* all it's cracked up to be and then some. Let's take a walk through the research lab for an itemized account of this supplement's many benefits.

1 FISH OIL IMPROVES EXERCISE EFFICIENCY

Scientists from Australia showed that fish oil decreases the amount of

work the heart and muscles have to do during maximal cycling exercise. They reported that fish oil supplements reduced not only the heart rate (including peak heart rate) during incremental exercise to exhaustion but also steady-state submaximal exercise heart rate, whole-body oxygen consumption and the oxygen requirements of the heart. In light of the data, it seems that fish oil makes the heart and skeletal muscles contract more efficiently during moderate- to high-intensity exercise.

Along similar lines, in a more recent study published in *Bioscience, Biotechnology, and Biochemistry*, Japanese

researchers hypothesized that since docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) in fish oil act as blood thinners, taking fish oil may improve blood flow and oxygen supply to tissues, thereby increasing exercise performance. In this double-blinded and placebo-controlled study, 20 fit, college-aged male volunteers took either 3.6 grams of fish oil or a placebo split into three daily doses for eight weeks. Before and after supplementation, subjects completed a series of VO2 max (maximum aerobic fitness) tests and submaximal exercise tests.

As predicted, the researchers found that fish oil supplements increased red blood cell EPA and DHA content and decreased oxygen consumption during steady-state submaximal exercise. They also reported that subjects who took fish oil had reduced measures of perceived exertion, meaning the exercise felt easier. Study authors concluded that fish oil supplementation improves exercise efficiency, which may also promote greater exercise endurance capacity.

2 FISH OIL PROMOTES ANABOLISM

It gets better. Recent evidence shows that taking omega-3 fatty acids like those found in fish oil in the face of hyperaminoacidemia (which occurs when you drink a whey protein isolate shake) and hyperinsulinemia (which occurs when you ingest fast-digesting carbohydrates like dextrose) leads to a considerable increase in anabolism.

In a study published in *Clinical Science*, scientists from Washington University School of Medicine (St. Louis) evaluated the anabolic effects of taking omega-3 fatty acids under conditions of hyperaminoacidemia and hyperinsulinemia. Nine healthy men and women ages 25 to 45 were subjected to stable-isotope tracer infusions and muscle biopsies before and after eight

weeks of omega-3 supplementation. The infusions were used to evaluate the rate of muscle protein synthesis and anabolic signaling under baseline conditions and during insulin and amino acid infusion. Interestingly, taking omega-3s alone did not affect anabolism, but when they were combined with hyperaminoacidemia and hyperinsulinemia there was a 34 percent increase in the muscle protein fractional synthesis rate and a 50 percent increase in major anabolic signaling factors. Of particular note, muscle biopsies revealed an increase in muscle protein concentration and muscle cell size.

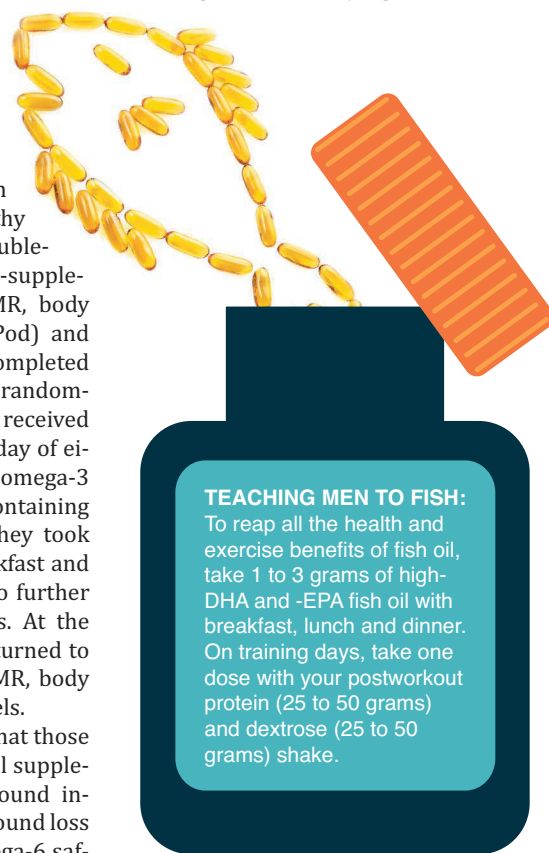
3 FISH OIL IMPROVES BODY COMPOSITION

Scientists from Gettysburg College in Pennsylvania conducted research that examined the effects of fish oil supplementation on resting metabolic rate (RMR), body composition and cortisol levels in healthy men and women. In this double-blinded study, baseline (pre-supplementation) measures of RMR, body composition (using a Bod Pod) and cortisol (from saliva) were completed after fasting. Subjects were randomly put into two groups and received four capsules (4 grams) per day of either fish oil containing only omega-3 fatty acids or safflower oil containing only omega-6 fatty acids. They took two capsules each with breakfast and dinner for six weeks, with no further changes made to their diets. At the end of the study, subjects returned to the lab to be retested for RMR, body composition and cortisol levels.

The researchers reported that those who took the omega-3 fish oil supplement had a more than 1-pound increase in lean mass and a 1-pound loss in fat mass, whereas the omega-6 safflower

oil group saw no changes. No changes were found in RMR or body mass in either group, but cortisol levels tended to be lower in those taking fish oil. This tendency correlated with that group's increase in lean mass and decrease in fat mass.

This is an interesting study, and the data suggest that changes in body composition with supplemental fish oil are at least partially due to the positive impact of omega-3 fatty acids on cortisol levels. Yet given the significant changes in body composition in the fish oil group, it's perplexing that there was no change in RMR. Regardless, the data are intriguing and provide solid support for the use of fish oil in those looking to maximize muscular gains while staying lean. ■



*"Subjects who took 4 grams of omega-3 fatty acids for six weeks had a more than **1-POUND INCREASE IN LEAN MASS AND A 1-POUND LOSS IN FAT MASS** with no further changes made to their diets."*



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SCIVATION XTEND

Pioneers and innovators in the BCAA category, Scivation continues to rely on cutting-edge science to solidify its place as an industry leader.

WHEN SCIVATION PIONEERED the intraworkout BCAA drink mix category 10 years ago, the company had no idea what sort of phenomenon it was unearthing. Immediately, world-class athletes, elite bodybuilders, champion powerlifters and weight-training enthusiasts began using Scivation Xtend during their workouts to help them train longer, harder and with more intensity. Well-trained users quickly noticed that Xtend helped them facilitate both fat loss and new muscle construction, real-world results that were scientifically replicated when investigated by university researchers. Plus, this unique formula orchestrated optimal protein synthesis and balanced the intracellular energy economy, leading to significantly reduced recovery times.

FORWARD PROGRESS

Never satisfied with just creating the category and two university studies demonstrating efficacy, Scivation began a campaign focused on improving product performance in areas often

ignored by others. Teaming up with some of the best sensory scientists in the field, Scivation found itself pushing the boundaries of what makes a good sport supplement great. Spoon-mixability, product clarity, layered aromas, complex flavor systems — even efforts to improve the look and feel of the powder itself — culminated in the Xtend BCAA product available today. And with 11 flavors including one unflavored “raw” version, Xtend is now the archetype against which other BCAA products are compared.

2:1:1 – A PROVEN RATIO

Even as Scivation pushed the Xtend formula forward, it remained unwavering in one area: the research-proven 2:1:1 ratio of BCAAs, the same as that found naturally in whey protein. While uninformed competitors began chasing dead-end trends such as 8:1:1 or 3:1:2 BCAA ratios and fumbled for a foothold in an exploding category, Scivation put its faith in the proven science.

Nearly all of the reputable peer-reviewed studies that highlight the ef-

fectiveness of branched-chain aminos — along with most of the anecdotal information coming from hardcore weight rooms — have investigated a 2:1:1 leucine to valine to isoleucine formula. And while leucine receives the lion’s share of the attention, valine and isoleucine are still vitally important to a multitude of the physique benefits that come from BCAAs.

One noteworthy study investigated muscle protein synthesis from either leucine on its own or from BCAAs at a 2:1:1 ratio. College-age, recreationally trained male participants received a straight leucine supplement, a 2:1:1 BCAA supplement or a noncaloric placebo before and after a leg workout. As expected, leucine performed better than the placebo, but the 2:1:1 BCAA ratio bested them both.

VALINE + ISOLEUCINE

In an attempt to dazzle folks with numbers, some lopsided amino formulas drop the amounts of valine and isoleucine in favor of leucine, a critical mistake that ends up smothering some other very important benefits. For one thing, valine competes with tryptophan for uptake into the brain, and a brain soaked in tryptophan will have a much harder time relaying the message to muscles that they need to work harder and push more weight. Furthermore, in a Japanese study scientists observed a fat-burning mechanism dependent upon isoleucine: Subjects who consumed more supplemental isoleucine gained less body fat than those who did not take isoleucine, even though both groups ate a high-fat diet. So when it comes to getting the most out of your training, whether you want to trigger postworkout muscle protein synthesis, thwart fatigue or stoke the fat-burning flames, a 2:1:1 branched-chain amino acid ratio is the way to go.

NEXT-LEVEL BCAA TECH

Scivation Xtend, the originator and leader in BCAA technology, is the trusted brand credited with creating the first BCAA intraworkout drink mix. With more than a decade devoted to improving and perfecting the formula, Scivation and its Xtend BCAAs have now been woven into the fabric of everyday fitness vernacular. ■

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*Scheett, et al. Consuming branched-chain amino acid supplement during a resistance training program increases lean mass, muscle strength and fat loss. Journal of the International Society of Sports Nutrition 2009, 6(Suppl 1):P1

*Scheett et al. Consuming branched-chain amino acid or whey protein in combination with hypocaloric diet differentially effects muscle mass, body fat and strength in trained subjects. Manuscript in Process.



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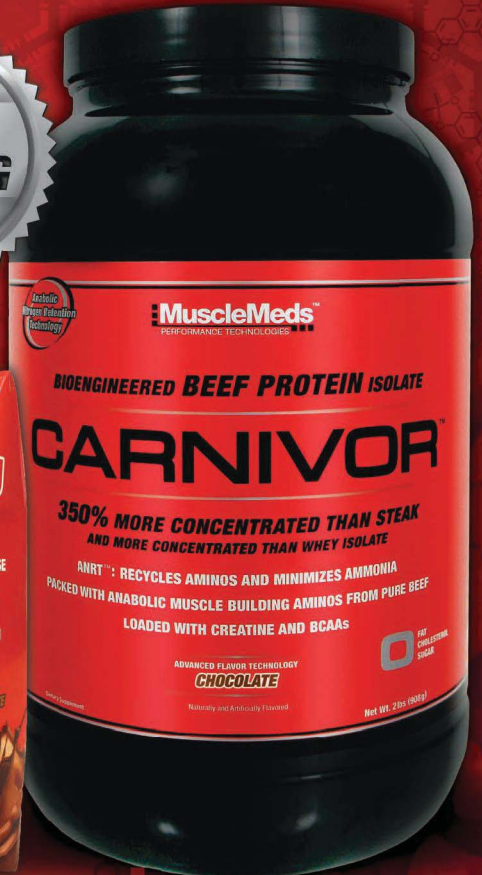
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*Planet Muscle & Bodybuilding, October 2011, "Best Tasting Chocolate Protein."

5 WAYS TO FIGHT TRAINING PAIN

These techniques can ease the aches and pains of hard workouts and even stave off injury.

BY MIKE CARLSON, NASM-CPT, CFLI



A doctor will tell you pain is an indication that something is wrong. A hardcore strength athlete will tell you pain is something that keeps weak-minded people out of the gym. We see both sides of the debate.

A certain amount of achiness is a fact of life and an occupational hazard of working out. If these stressors build up, though, they can keep you out of the weight room and even lead to injury by forcing you into compensatory movement patterns that degrade mobility and joint health over time. It's imperative, then, that part of your training include some basic self-maintenance. A diet centered on whole foods, plenty of sleep, proper hydration and regular self-myofascial release (foam rolling) are the foundation, but the following five strategies can be huge during periods of increased training intensity.

1 COMPRESSION GARMENTS

Compression gear can make you feel stronger, safer and more stable, and they look cool, besides (at least they do on LeBron James). A study published last year in the journal *Medicine & Science in Sports & Exercise* found that trained men who wore compression garments after lifting weights experienced significantly faster recovery. Specifically, they were able to hit their one-rep maximum in the bench press

much sooner after a strenuous training session than those who wore normal clothing after the initial workout. For more on this, turn to page 24.

2 FISH OIL

The omega-3 fatty acids in fish oil are a potent anti-inflammatory and help fight enzymes that degrade cartilage. A study published in the *Clinical Journal of Sport Medicine* found that taking fish oil reduced symptoms of delayed-onset muscle soreness in the 48 hours after a hard workout. Other research shows that an equitable ratio of omega-3 to omega-6 fatty acids supports collagen production, an important structural protein in connective tissue. Flip to page 59 for even more benefits.

3 KINESIOLOGY TAPE

Originally a tool for physical therapists, kinesiology tape (commonly called k-tape) is now used by athletes to continue training and competing pain-free and with a full range of motion. This lightweight elastic tape facilitates healing by lifting skin away from soft tissue to promote greater blood flow to minor injuries for faster recovery. A study in the *Journal of Physiotherapy* found that subjects who applied kinesiology tape to nonspecific lumbar back pain experienced significantly greater improvement in disability, better trunk endurance

and decreased pain compared to those who did not use the tape.

4 CONTRAST SHOWER

Exposing your body to intermittent bouts of heat and cold causes the lymph system to expand and contract, pushing metabolic waste out of cells and reducing inflammation. A study published in *The Journal of Strength and Conditioning Research* found that this type of water therapy helped subjects quickly regain full muscle function after a brutal, soreness-inducing workout. The easiest way to accomplish this is with a simple contrast shower, alternating hot and cold water. Use a 3:1 ratio of duration for hot to cold, with temperature extremes that are just barely tolerable, and always end the shower on cold.

5 EPSOM SALT BATH

One of the cheapest and easiest recovery strategies around is also one of the oldest. Adding Epsom salts (aka magnesium sulfate) to a warm bath helps reduce inflammation, regulate electrolytes and improve nerve, muscle and enzyme functioning. Research shows that active populations are chronically low in magnesium, and since magnesium is one of the few nutrients that can be absorbed through the skin, an Epsom salt bath can help restore optimal levels of this valuable mineral. ■



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